

Contents

| | |
|--|------|
| <i>Preface to the Second Edition</i> | iii |
| <i>Preface to the First Edition</i> | v |
| <i>Acknowledgments</i> | vii |
| <i>Special Features of the Book</i> | xiii |
| <i>Syllabus</i> | xvii |

| | | |
|------------------|--|-------------|
| Chapter 1 | Introduction to Anatomical Terms and Organization of the Human Body | 1–16 |
|------------------|--|-------------|

- Subdivisions of Anatomy and Physiology 2
- Parts of the Body 8
- Terminologies 10
- Environment 15
- Homeostasis 15

| | | |
|------------------|--|--------------|
| Chapter 2 | Introduction to the Detailed Structure of Cells and Tissues of the Body | 17–39 |
|------------------|--|--------------|

- Levels of Organization 18
- Basic Tissues 24
- Membranes 36
- Glands 37

| | | |
|------------------|--------------|--------------|
| Chapter 3 | Blood | 41–53 |
|------------------|--------------|--------------|

- Formation of Blood 42
- Functions of Blood 42
- Composition of Blood 42
- Types of Blood Cells 44
- Blood Clotting 49
- Blood Products and their Uses 49
- Blood Groups 50
- Crossmatching 50

| | | |
|------------------|---------------------------|--------------|
| Chapter 4 | Circulatory System | 55–79 |
|------------------|---------------------------|--------------|

- Circulation of Blood 56
- Systemic Circulation 57
- Major Arteries and Veins of the Body 58
- Portal Circulation 66
- Heart 66
- Conducting System of Heart 70

- Nerve Supply of Heart 71
- Cardiac Cycle 71
- Electrical Events in Heart 73
- Cardiac Output 73
- Pulse 74
- Blood Pressure 74

Chapter 5 Lymphatic System 81–85

- Lymph and Lymphatic Vessels 82
- Thymus 82
- Tonsils 83
- Spleen 83
- Lymph Nodes 84
- Intestines 84
- Functions of Lymphatic System 84

Chapter 6 Respiratory System 87–105

- Organs of Respiration 88
- Mechanism of Respiration 95
- Lung Volumes 99
- Characteristics of Normal Respiration 100
- Gas Exchange in Lungs 100
- Effect of Exercise on Respiration 101
- Transport of Gases in Bloodstream 101
- Regulation of Respiration 102
- Basal Metabolic Rate 102

Chapter 7 Digestive System and Nutrition 107–147

Digestive System 108

- Layers of the Alimentary Canal 109
- Digestive Tract/Alimentary Canal 110
- Glands Associated with Digestive System 118
- Liver 118
- Extrahepatic Biliary Apparatus 120
- Pancreas 121
- Spleen 121
- Digestion and Absorption 122
- Metabolism 127

Nutrition 130

- Vitamins 131
- Minerals 131
- Carbohydrates 131
- Proteins and Fats Requirements 132
- Nutrition Needs During Various Stages of Life 133

| | | |
|-------------------|---|----------------|
| Chapter 8 | Excretory System | 149–171 |
| | Skin 150 | |
| | • Epidermis 150 | |
| | • Dermis 151 | |
| | • Free Nerve Endings 152 | |
| | • Merkel (Disc Shaped) Endings 152 | |
| | • Tactile Corpuscles of Meissner 152 | |
| | • Appendages of Skin 152 | |
| | • Functions of the Skin 154 | |
| | • Regulation of Body Temperature 155 | |
| | Urinary System 158 | |
| | • Components of Urinary System 158 | |
| | • Kidneys 159 | |
| | • Functions of Kidney 164 | |
| | • Ureters 164 | |
| | • Urinary Bladder 165 | |
| | • Female Urethra 166 | |
| | • Male Urethra 166 | |
| | • Micturition 166 | |
| | • Formation of Urine 167 | |
| | • Composition of Urine 168 | |
| | • Fluid and Electrolyte Balance 168 | |
| Chapter 9 | Endocrine System | 173–184 |
| | • Hypothalamus and Pituitary Gland 175 | |
| | • Thyroid Gland 176 | |
| | • Parathyroid Glands 177 | |
| | • Suprarenal/Adrenal Glands 177 | |
| | • Pancreas—Islets of Langerhans 179 | |
| | • Pineal Gland 180 | |
| | • Ovaries 180 | |
| | • Testes 180 | |
| | • Placenta 181 | |
| | • Juxtaglomerular (JG) Apparatus in Kidneys 181 | |
| | • Local Hormones 181 | |
| Chapter 10 | Reproductive System | 185–206 |
| | • Female Reproductive System 186 | |
| | • Female Menstrual Cycle 191 | |
| | • Breast/Mammary Gland 192 | |
| | • Fundamentals of Reproduction 193 | |
| | • Placenta 196 | |
| | • Principal Events of Embryonic and Fetal Development 197 | |

- Male Reproductive System 198
- Human Sexual Response 202
- Fertilization, Implantation and Development 202
- Reproductive Health 202

Chapter 11 Nervous System 207–240

- Neurons 208
- Parts and Functions of CNS (Brain and Spinal Cord) 210
- Parts and Functions of PNS 220
- Parts and Functions of Autonomic Nervous System 230
- Reflex Action and Reflex Arc 234
- Electroencephalogram 235

Chapter 12 Special Senses 241–255

- Tongue 242
- Nose 242
- Eye 244
- Ear 249

Chapter 13 Skeletal System (Osteology) 257–283

- Bones and Cartilages** 258
- Formation of Bones 258
 - Function and Classification of Bones 258
 - Structure of Bone 260
 - Bones of Appendicular and Axial Skeleton 260
 - Tendons and Ligaments 272
- Joints** 274
- Definition 274
 - Types of Joints 274
 - Major Synovial Joints of the Body 277

Chapter 14 Muscular System 285–304

- Classification 286
- Skeletal Muscle Fiber 287
- Muscular Contraction and Fatigue 288
- Chief Muscles of the Body 289
- Anatomical Spaces 301

Histological Slides 305–319

Appendices 321–324

- Appendix 1: Measurements 322
- Appendix 2: Normal Values for Selected Blood Tests 323

Index 325–336